Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PROBLEMS.

54. Proposed by D. P. WAGONER, A. B., Principal of the School of Languages, Westerville, Ohio.

A man bought a farm for \$6,000 and agreed to pay for it in four equal annual installments at 6% annual interest compounded every instant. Required his annual payment. *B. F. Burleson.*

55. Proposed by J. C. CORBIN, Pine Bluff, Arkansas.

How long will it take to count a million, in the following manner: the counter is to pronounce each syllable in the names of the successive numbers at the rate of one per second?

◆

ALGEBRA.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

SOLUTIONS OF PROBLEMS.

46. Proposed by WILLIAM HOOVER, A. M., Ph. D, Professor of Mathematics and Astronomy, Ohio University, Athens, Ohio.

Find θ from $\cos\theta+\cos 3\theta+\cos 5\theta=0\ldots.(1)$.

Solutions by JOE A. JOHNSON, Student of the Sophomore Class, University of Mississippi; E. L. SHERWOOD, A. M., Professor of Mathematics, Mississippi Normal College, Houston, Mississippi; J. B. FAUGHT, A. B, Indiana University, Bloomington, Indiana; J. C. CORBIN, Pine Bluff, Arkansas; G. I. HOPKINS, Department of Mathematics in High School, Manchester, N. H.; OTTO CLAYTON, M. B., Maxwell, Indiana; O. W. ANTHONY, M. S., Missouri Military Academy, Mexico, Missouri; and A. H. BELL, Hillsboro, Illinois.

I. Equation (1) $=\cos\theta+(4\cos^3\theta-3\cos\theta)+(16\cos^5\theta-20\cos^3\theta+5\cos\theta)=16\cos^5\theta-16\cos^3\theta+3\cos\theta=\cos\theta\,(16\cos^4\theta-16\cos^2\theta+3)=0$ $\ldots.(2)$. Whence $\cos\theta=0$. $\therefore\ \theta=\frac{\pi}{2}$. From $16\cos^4\theta-16\cos^2\theta+3=0$, we get $\cos^2\theta=\frac{3}{4}$, or $\frac{1}{4}$. $\therefore\ \cos\theta=\pm\frac{1}{2}\sqrt{3},\ \pm\frac{1}{2}$. $\therefore\ \theta=\frac{\pi}{6},\ \frac{5}{6}\pi$, or $\frac{\pi}{3}$ and $\frac{2}{3}\pi$, which are all the values $<\pi$. [*J. A. Johnson.*]

II. Factoring (2), $(4\cos^2\theta-3)(4\cos^2\theta-1)\cos\theta=0$. Whence $\cos\theta=\pm\frac{1}{2}\sqrt{3},\ \pm\frac{1}{2},\ 0$. $\therefore\ \theta=\frac{\pi}{6},\ \frac{\pi}{6}\pi,\ \frac{5}{6}\pi,\ \frac{7}{6}\pi;\ \frac{\pi}{3},\ \frac{5}{3}\pi,\ \frac{2}{3}\pi,\ \frac{4}{3}\pi;\ \frac{1}{2}\pi,\ \frac{3}{2}\pi$.

[*E. L. Sherwood.*]

III. From equation (2), we find $\cos\theta=0;\ \pm\frac{1}{2}\sqrt{3}$, or $\pm\frac{1}{2}$. $\therefore\ \theta=\frac{\pi}{2}$,